

Motorised Floor Sweeper

Background of the Invention

- 5 The present invention relates to floor sweepers. More particularly, although not exclusively, the invention relates to a motorised floor sweeper having counter-rotating driven brushes.
- 10 Non-powered carpet sweepers are known. These comprise floor-engaging wheels or rollers connected by a transmission to a rotating brush. In order to rotate the brush at an effective speed, significant effort is required to push the carpet sweeper across the floor
- 15 surface.

Mains powered vacuum cleaners having large-capacity dust bags and air filters are also known. These are useful in cleaning large areas of carpet for example, but are heavy

20 and limited somewhat by the need to extend a power cord to a wall socket.

Battery-operated handheld vacuum cleaners that draw air through a nozzle are also known. These are useful for

25 cleaning up smaller areas, but are impractical for cleaning substantial flat areas.

Object of the Invention

It is an object of the present invention to overcome or substantially ameliorate at least one of the above
5 disadvantages and/or more generally to provide an improved floor sweeper.

Disclosure of the Invention

10 There is disclosed herein a motorised floor sweeper comprising:

a chassis,

a pair of elongate brushes mounted to the chassis in parallel relationship with one another,

15 an electric motor mounted to the chassis and causing counter-rotation of one of the brushes with respect to the other brush, and

a dust compartment adjacent to at least one of the brushes for receiving dust swept up thereby.

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Preferably, the floor sweeper comprising a pair of said electric motors, one of which drives one of the brushes and the other of which drives the other brush.

25 Preferably the electric motors are positioned between the rollers.

Preferably one of the motors is situated adjacent to one

end of the brushes and the other motor is situated adjacent to the other end of the brushes.

Preferably the floor sweeper further comprises a battery
5 compartment in between the brushes.

Preferably, the floor sweeper further comprises a pair of drive belts, one transmitting rotational output of one of the motors to one of the brushes and the other of which
10 transmits rotational output of the other motor to the other brush.

Preferably, the floor sweeper further comprises floor-engaging rollers attached to the chassis and maintaining
15 each brush at a defined spacing above a flat swept surface in use.

Preferably the rollers are located inboard of the brushes.

20 A preferably, the floor sweeper further comprises a pair of buffer strip upon the chassis outboard of the brushes defining a minimum spacing between the brushes and a flat swept surface in use.

25 Preferably, the floor sweeper further comprises a pair of said dust compartments - one adjacent to each brush and a deflection surface adjacent to each brush and positioned proximate a respective said dust compartment to deflect

dust swept up by the brush into that dust compartment.

Preferably, the deflection surface has an edge strip
defining a minimum spacing between the brushes and a flat
5 swept surface in use.

Preferably, each brush has a plurality of bristles
extending radially therefrom and wherein the bristles have
tips that reach a flat swept surface if one of the buffer
10 strips engages the flat swept surface in use.

Preferably, each brush comprises a radially extending
strip extending radially as far as the tips of the
bristles.

15 A preferably, the carpet sweeper further comprises an
attachment for an elongate handle attached to the chassis
by a multi-pivot joint.

20 Brief Description of the Drawings

A preferred form of the present invention will now be
described by way of example with reference to the
accompanying drawings, wherein:

25 Figure 1 is a schematic cross-sectional end elevation of
a motorised floor sweeper,

Figure 2 is a schematic cross-sectional top view of the floor sweeper of Figure 1,

Figure 3 is a schematic plan of the floor sweeper of
5 Figures 1 and 2,

Figure 4 is a schematic elevation of the floor sweeper of figures 1 to 3, and

10 Figure 5 is a schematic plan of the floor sweeper of Figures 1 to 4.

Description of the Preferred Embodiment

15 In the accompanying drawings there is depicted schematically a motorised floor sweeper 10 comprising a chassis 11 having a handle attachment 19 connected thereto by a multi-pivot joint 20 to be described later.

20 The chassis 11 is typically a plastics moulding and has a pair of brushes 21 rotatably mounted therein. Each brush 21 comprises a central longitudinal horizontal shaft 12 extending in the transverse direction of the chassis and parallel to one another. A plurality of bristles 22

25 extend radially from the shaft 12. Formed integrally with the shaft 12 is a straight longitudinal strip 18 having a remote edge at the same or similar radial offset to the shaft longitudinal axis as the tip of each bristle

22. As shown in Figure 2, the bristles extend in a spiral formation about the shaft 12.

Supported rotatably at the bottom of the chassis are four
5 rollers 14. When all of the rollers contact a hard flat
swept surface, the tips of the bristles 22 are spaced
away from the floor surface. If the floor sweeper is
being used on carpet however, the rollers 14 will sink
into the carpet somewhat thereby allowing the tips of the
10 bristles to contact the top of the carpet pile or at
least approach the carpet pile. There is a buffer strip
15 at the forward and trailing edges of the chassis 11
which would press against the floor surface or carpet
should the chassis tilt about one of the rollers 14 in
15 use. The rollers 14 and tips of the bristles 22 extend
the same distance downwardly from the chassis 11 this
enables the bristle tips to just touch on a hard floor
surface. The bottom extremity of the buffer strip 15 is
approximately 8.5 mm higher than the bottom extremity of
20 each roller 14. This enables the sweeper to be used on
carpet without jamming of the brushes 21.

Located inboard of and adjacent to each brush 21 is a
deflection plate 16 having an edge strip 17 approximately
25 5.5 mm higher than the bottom extremity of each roller
14. Above each deflection plate 16 there is an opening
24 through which dust swept up by the respective brush 21
enters a dust compartment 23. It should be noted in this

regard that the right-hand brush in Figure 1 rotates in a clockwise sense, whereas the left-hand brush rotates in an anticlockwise sense. There is a lid 25 covering each dust compartment 23 which can be lifted prior to
5 inversion of the chassis for dust-removal purposes.

There is a rechargeable battery 26 located in between the brushes 21 and extending in the transverse direction across the chassis. The battery powers a pair of motors
10 13 electrically connected in parallel and each having an output pulley 27 about which a drive belt 28 extends. Each drive belt 28 extends about a roller pulley 29 at the end of each roller. As seen in Figure 2, the motors 13 flank the batteries 26 and the respective pulleys and
15 drive belts are at opposite lateral ends of the chassis 11. There is a switch 30 (Figure 5) on the top of the chassis to activate the motors 26.

The handle attachment 19 has a hollow interior to receive
20 the end of a wooden broom handle for example. At the bottom end of the attachment there is a recess 31 into which a pivot pin 32 of a pivot joint 33 is received. The pivot joint 33 can pivot about axis A (Figure 1) back and forth in a plane of intended operational movement of
25 the floor sweeper 10. The pivot joint 33 is designed to also enable pivotal movement of the handle attachment 19 about axis B (Figure 4) so that the handle attachment can pivot in a lateral direction.

It should be appreciated that modifications and alterations obvious to those skilled in the art are not to be considered as beyond the scope of the present invention. For example, a single motor might be adapted
5 to drive both brushes in opposite rotational directions.